

REMARKS

Claims 1 through 18 continue to be in the case.

The Office action refers to Claim Rejections - 35 USC § 112.

Claims 1-18 are rejected under 35 U. S. C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims appear to be a translation of claims in a foreign filed application, and as such, contain errors in form and grammar, for example, claim 1, line 2, "tooth dentures at crowns" and line 6, "from the pullout direction", the use of multiple alternative language and the use of indefinite language such as "for example". All of the claims must be checked and placed in proper U.S. form

The claims 1 through 18 are being amended to obviate the rejection.

Claims 1-18 stand rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. It is unclear how the invention operates. Applicant describes directions of lift with respect to a denture or implant, however, it is not clearly shown how these elements relate. The operation of element 15 is unclear, for example, how is the stop released.

The operational element 15 is explained in the specification on page 18, line 19 through page 19, line 3, as follows:

“The locking device A is secured against following out in basal direction by being seated in its position shifted in a basal direction with a limit stop face 15 in the locking bar R as well as by pushing with a limit stop face 16 against the bolt B (figure 2).”

The Office Action refers to Drawings.

The examiner objects to the drawings filed March 22, 2001 because the letter designations located within darkened cross-hatching are unclear. The drawings do not clearly show the invention, a figure or figures showing a denture and/or implant and the orientation of the elements is required. No new matter may be added.

The undersigned is waiting for authorization by the applicant to have revised drawings prepared. As soon as such authorization is received revised drawings will be prepared and submitted.

The Office Action refers to the Specification

The specification is objected to because it appears to be a translation of a foreign filed disclosure, and as such, contains errors in form and grammar,

for example, see page 3, line 4, "in the course of line" and line 16, "gripped into a groove". The entire disclosure must be checked and placed in proper U.S. form.

Headings are suggested.

The suggestions of the Examiner are well taken. As soon as revised drawings are available a revision of the specification is planned. Applicants agree to insert headings into the specification.

The Office Action refers to Claim Rejections - 35 USC § 103.

Claims 1-18 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Romagnoli (4345901). Romagnoli shows a connecting element having a slidable locking bar 13, Fig. 5, spring 15 and push button 14. The disengagement of 13c from groove 6 will obviously release inherent tension between the elements and effect a slight lifting. The specific shape of the inferentially claimed denture or tooth or implant is given no patentable weight. The process of making the elements is an obvious matter of choice in process steps used to obtain an obvious structure to one of ordinary skill in the art. The specific shape of the elements is an obvious matter of choice in the shape of known structure to the skilled artisan.

The rejection is respectfully traversed.

Claim 1 near the end requires the clause:

"wherein the locking device (A) is movable upon actuation of the pushbutton (D) by a spring force acting in the direction of the shift motion of the locking bar (R) or by the motion of the locking bar (R) itself ". This feature of applicant's invention is clearly absent from the reference Romagnoli..

Claim1 near the end requires further the clause:

"such that the locking device effects slight lifting of the connection element in removal direction of the denture through limit stop faces. ". This clause again is clearly absent from the Romagnoli reference.

Applicant respectfully submits that claim 1 clearly and expressly defines over the Romagnoli reference.

The United States patent 4,545,901 to Romagnoli teaches a device for removable connection of tooth prosthesis. The connection device known from the reference Romagnoli comprises a frustro-conical male mold element 5, which the frustro-conical male mold element 5 is connected to a base 3 and contains a cylindrically perpendicular running groove 6 and an inclined disposed groove 7. A matrix element 10 is composed essentially out of a block, wherein the block exhibits a frustro-conical recess 11, wherein the male mold element touches the frustro-conical recess 11 such that the matrix element is adapted through the male mold element. A tube

shaped jacket 12 surrounds a sliding element 13, wherein the sliding element 13 is axially pretensioned with the aid of a spring 15 and wherein the sliding element 13 is supported by a screwed-in cap 16 at one end of the jacket. A push button 14, which is attached to a thread part 13d at the end of the sliding element remote from the spring, renders it possible to shift the sliding element in axial direction against the force of the spring. When the block is adapted through the matrix element 10, then a part of the sliding element 13 is captured by the corner of the inclined groove 7 and is axially shifted, whereupon the perpendicular running groove 6 is reached, which attaches the matrix part and the male mold part to each other.

The subject matter of the present application is a connection element for attachment of removable tooth prosthesis at tooth crowns or tooth implants. The features of the Invention are described in the claim 1.

The features of the Invention resolve the object set forth in the application that an easily operable tooth prosthesis attachment is furnished in the shape of a fully automatic bolt, which tooth prosthesis functions

without problems in case of increased friction between the removable prosthesis and the fixed seated part and which requires a comparably low production expenditure.

It is an advantage of the present Invention relative to the state of the art taught in the reference Romagnoli that the bolt according to the present Invention is without friction both during insertion as well as during removal.

Applicant notes that equivalent German patent application has led to the issued German Patent 19936121 C1. A copy of this document is attached to the present response.

The Office Action refers to Priority.

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(x)-(d), which papers have been placed of record in the file.

Applicant appreciates that the Office Action recognizes receipt of the priority documents.

The Office Action concludes that the prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Menicacci (4698020) shows a spring. Steinfert et al shows stops.

Applicant submits that the prior art made of record neither anticipates nor renders obvious the present invention.

Reconsideration of all outstanding rejections is respectfully requested.

All claims as presently submitted are deemed to be in form for allowance and an early notice of allowance is earnestly solicited.

Respectfully submitted,

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MARKED UP VERSION OF THE AMENDED CLAIMS

(Version with marking to show changes made)

current claims

1. (amended) [Connection] A connection element for the attachment of removable tooth dentures [at] to crowns of teeth or tooth implants with a locking bar (R) supported slidable perpendicular to [the pullout] a removal direction of the denture, wherein the locking bar is guidable by the force of [one or several springs] a spring (F) as seen from the [pullout] removal direction of the denture under regions of a fixedly seated element (S) formed at [one or several] a tooth [crowns] crown or [, respectively, one or several] a tooth [implants] implant and wherein the locking bar with its parts effective for the locking is removable again out of these regions against this spring force by actuation of a pushbutton (D) acting upon the locking bar (R), characterized in that a locking device (A) is provided for the locking bar (R), wherein the locking device (A) is movable upon actuation of the pushbutton (D) by a spring force acting in the direction of the shift motion of the locking bar (R) or by the motion of the locking bar (R) itself [or by both effects together] such that the locking device effects slight lifting of the connection element in [pullout] removal direction of the denture through limit stop faces.

2. (amended) [Connection] The connection element according to claim one, characterized in that after the actuation of the pushbutton (D), a spring force acting in the direction of the shift motion of the locking bar (R) maintains the connection element in a slightly lifted position in the [pullout section] removal direction of the denture by the cooperation of limit stop faces and guide faces.
3. (twice amended) [Connection] The connection element according to claim 1, characterized in that the locking bar (R) and the locking device (A) are guided in a casing (G, G1/G2), wherein the casing is [for example formed box shaped or sleeve shaped and which is] attachable by [soldering, welding or gluing] at the denture frame, wherein the recess in the denture frame is pre-formable with auxiliary parts out of plastic, metal or ceramic for receiving the casing and wherein the connection to the denture frame is produceable by a dovetail shaped extension (20).
4. (twice amended) [Connection] The connection element according to claim 1, characterized in that the locking bar (R) and the locking device (A) are guided in corresponding recesses directly in the denture frame [, which recesses are produceable for example by drilling, by spark erosion and/or by employing of auxiliary parts made of ceramics or out of a high melting metal].

5. (twice amended) [Connection] The connection element according to claim 1, characterized in that the locking device (A) forms a self-contained, movably supported part which is placeable into motion upon actuation of the pushbutton (D) [by the force of at least one spring (F) and/or the co-action of limit stop faces and guide faces] and which effects a slight lifting of the connection element in pullout direction by pushing of a limit stop face (11,24,32,36) at the fixedly seated element (S).

6. (amended) [Connection] The connection element according to claim 5, characterized in that the locking device (A) in the casing (G), in the denture body or in the locking bar (R) is supported slidable at least along a closing-basal direction [and/or] or supported rotatable around an axis disposed perpendicular to the direction of motion of the locking bar (R), wherein a falling out in a basal direction is prevented by limit stops for example at the casing (G) or at the bolt (B).

7. (twice amended) [Connection] The connection element according to claim 1, characterized in that the force of the at least one spring (F) is directly transferable, wherein the spring (F) [also can be] is attached at the locking device (A) or indirectly transferable onto the locking device (A) upon actuation of the pushbutton (D) and after releasing the pushbutton (D).

8. (twice amended) [Connection] The connection element according to claim 1, characterized in that the motion of the locking bar (R) is directly transferable or is indirectly transferable through a bolt (B) onto the locking device (A) upon actuation of the pushbutton (D).
9. (twice amended) [Connection] The connection element according to claim 1, characterized in that upon actuation of the pushbutton (D), both the force of the at least one spring (f) as well as by way of limit stop faces (12, 13, 37, 38) the motion of the locking bar (R) are transferable onto the same bolt (B) and through further limit stop faces (10,35) onto the locking device (A).
10. (twice amended) [Connection] The connection element according to claim 1, characterized in that the locking device (A) together with the locking bar (R) forms a common part, wherein the common part is supported limited rotatable around an axis disposed in the direction of the shifting motion in addition to a shiftable support and wherein upon actuation of the pushbutton D the common part is placed into rotation by the co-action of the limit stop faces and guide faces and wherein a slight lifting of the connection element in pullout direction is effected by pushing of one limit stop face (45) at the fixedly seated element (S).

11. (twice amended) [Connection] The connection element according to claim 1, characterized in that the locking device (A) holds the locking bar (R), after the locking bar has been moved upon actuation of the pushbutton (D) against the force of at least one spring (F), in this position upon removal of the denture by the co-action of limit stop faces (6,14,25,26,29,33,39,40,46,47) and releases upon insertion of the denture based on the pushing of limit stop faces (11,24,32,36) of the locking device (A) again at the fixedly seated element (S), such that the locking bar (R) can be led back again by the spring force.

12. (twice amended) [Connection] The connection element according to claim 1, characterized in that the locking bar (R) is led back again by the spring force upon removal of the denture after moving the locking bar (R) upon actuation of the pushbutton (D) against the force of at least one spring (F), and wherein the locking bar (R) is moved again against the force of the at least one spring (F) during insertion of the denture by the action of inclined guide faces, wherein the locking bar (R) is then again led back by the spring force in case the denture is fully inserted.

13. (twice amended) [Connection] The connection element according to claim 1, characterized in that the movable parts are secured against falling out in the direction of the spring (F) by the locking device (A) itself, by a sleeve shaped screw (Sch1) inserted in the direction of the shifting motion

of the locking bar (R) or by screw (Sch2, Sch3) inserted from the basal direction and wherein the disassembly is performed by pressing in of the locking device (A) against the spring force acting onto the locking device (A) through limit stop faces or by removing of the screw (Sch1, Sch2, Sch3).

14. (twice amended) [Connection] The connection element according to claim 1, characterized in that the fixedly seated element is formed⁵/by a web extension or by a web (S), wherein parts of the denture framed or of the casing (G) can engage in guide grooves [and wherein the locking bolt engagement can be performed one-sided or two sided].

15. (twice amended) [Connection] The connection element according to claim 1, characterized in that a sleeve (H) is provided for [better] guiding of the locking bar (R) through the prosthetic body.

16. (twice amended) [Connection] The connection element according to claim 1, characterized in that the diameter of the pushbutton (D) is of the same size or larger as the diameter of the locking bar (R), wherein the pushbutton (D) and the locking bar (R) form a common part [or are connected to each other by press fitting, bolting or screwing together].

17. (twice amended) [Connection] The connection element according to claim 1, characterized in that the spring (F) is disposed [within the locking bar (R) or outside of the locking bar (R)] between the locking bar (R) and the casing (G) [, of an outside disposed sleeve (H) or of a sleeve shaped screw (Sch1)].

18. (twice amended) [Connection] The connection element according to claim 1, characterized in that the individual construction parts are formed as confection parts out of a member selected from the group consisting of dental alloy, [out of] titanium, [out of] a spring material [or out of] and plastic.